

# ANTIMICROBIAL STEWARDSHIP: KNOWLEDGE, ATTITUDE, AND PRACTICE SURVEY AMONG HCPS OF PAKISTAN TO OPTIMIZE ANTIMICROBIAL USE

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## Introduction

- Antimicrobial resistance is a critical global threat, driven by antibiotic misuse and overuse in humans, animals and agriculture
- Healthcare providers (HCPs) are pivotal in stewardship efforts to combat the AMR crisis



- The study aims to strengthen Antimicrobial Stewardship Program (AMS) in hospitals of Pakistan to optimize antimicrobial use (AMU)
- Unchecked use of antibiotics is predicted to cost more than 10 million deaths annually by 2050 and place an ever-growing burden on the economy



- Leadership Commitment weak performance indicates ASP leaders are not fully engaged or clear about their roles
- Accountability shows hospitals are trying to hold teams responsible but lack rigour, with partial success in making ASP teams accountable
- Pharmacy Expertise highlights pharmacists are not leading ASP initiatives effectively
- Antimicrobial Use guidelines are partially followed but not strictly enforced
- Tracking Antibiotics is fairly well, but there's still scope for optimization as it's the strongest area of AMS
- Education Practices indicate ASP education is prioritized but insufficient, with HCPs receiving some training but not enough impact

Core Components (n = 386 HCPs)

AMS Component	Mean Score	SD	p-value
Leadership Commitment	2.9	1.1	0.04
Accountability	3.1	1.1	0.01
Pharmacy Expertise	2.9	1.2	0.06
Antimicrobial Use	3.0	1.0	0.02
Tracking Antibiotics	3.2	1.0	< 0.001
Education Practices	3.0	1.1	0.02



## Methodology

- Study Design: Analytical cross-sectional study (Feb 2023 - Jul 2023)
- Study Sites: 8 public & private hospitals in Sialkot District and Islamabad Capital Territory (ICT), Pakistan (bed capacity: 200-400)
- Sample Size: 386 HCPs (calculated using single population proportion formula; 95% CI, 5% margin of error)
- Sampling Technique: Randomized selection of HCPs from hospitals (systematic sampling: 1 HCP was selected from the list, after that, every 4th HCP was included)
- Participants: HCPs from Hospital administrators, medical officers, nursing officers, pharmacists, and other medical professionals (excluded: basic sciences doctors, radiologists, psychiatrists, part-time staff, interns)
- Data Collection Tool: A semi-structured questionnaire was adapted from the CDC and WHO on the Antibiotic Stewardship Program at Hospitals
- Data Analysis: Descriptive statistics (SPSS 26); Chi-square test for associations; Odds ratios for correlations (95% CI)
- Ethics: Approved by Health Services Academy, Islamabad Ethics Review Board; Informed consent; Confidentiality ensured



- Tracking Antibiotics strongly linked to better AMS practice, making it critical for ASP success as monitoring drives action
- Accountability directly improves AMS practice by ensuring responsibility, with clear accountability leading to better outcomes
- Leadership Commitment shows strong leadership drives ASP implementation, and without it, AMS falters
- Education Practices show support for the AMS practice, but it is less impactful than tracking or accountability, helping but not being enough on its own
- Pharmacy Expertise is underutilized in ASPs, with its role not significantly influencing AMS practice

Correlations Between AMS Practice &amp; Core Components

AMS Component	(r)	p-value
Leadership Commitment	0.42	< 0.01
Accountability	0.45	< 0.01
Education Practices	0.38	< 0.01
Pharmacy Expertise	0.25	0.09
Tracking Antibiotics	0.50	< 0.001



- Most HCPs have AMS Knowledge about AMS basics, showing structured learning exists, but knowledge is not the main problem
- AMS Attitude shows HCPs are neutral or skeptical about AMS importance, with belief in AMS lacking even among knowledgeable staff
- AMS Practice among very few HCPs apply AMS in daily work, highlighting a large gap between knowing and doing AMS
- HCPs know about AMS but don't believe in its value and can't implement it, disconnecting attitude and practice from knowledge

AMS Knowledge, Attitude, &amp; Practice Levels (n = 386 HCPs)

Category	Percentage	p-value
AMS Knowledge	62.10%	< 0.01
AMS Attitude	42.00%	0.045
AMS Practice	26.70%	0.012



- Accountability is tied to tracking effectively, with private hospitals doing better in linking responsibility with monitoring
- Public Hospitals do not have a clear link between accountability and tracking exists, indicating a lack of structured ASP mechanisms and need for reforms

## Conclusion

- Antimicrobial Stewardship practices among HCPs, driven by weak leadership, underutilized pharmacist roles, and a critical disconnect between knowledge and practice. Private hospitals outperform public ones in aligning accountability with antibiotic tracking, underscoring the urgent need for institutional reforms
- To combat AMR our research advocates for robust policy frameworks, mandatory AMS training, and pharmacist-led stewardship programs, emphasizing a multi-faceted approach that strengthens accountability, leadership, and interprofessional collaboration in healthcare settings

## Reference

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